In the Claims

1. (currently amended)   A method comprising:

identifying zone boundaries for a zone that includes a destination position;

retrieving compensation values for the zone boundaries from a data structure;

approximating a runout compensation value for the destination position based on the retrieved compensation values for the zone boundaries; and

generating a control signal for controlling an arm based on the approximate compensation value for the destination position.

2. (currently amended)   The method of claim 1, wherein approximating the runout compensation value for the destination position includes performing a piecewise linear interpolation on the retrieved compensation values for the zone boundaries.

3. (original)   The method of claim 1, wherein the data structure is a table of radially-dependent repeatable run-out zoned compensation values for boundaries of established zones of a storage medium.

4. (original)   The method of claim 3, wherein the table is generated by recording, during a calibration process, write-in repeatable run-out compensation values for boundaries of each zone of the storage medium for at least one harmonic.

5. (original)   The method of claim 3, wherein identifying zone boundaries for the zone that includes a destination position includes comparing a track number to track numbers for boundaries in the table and selecting a first boundary track whose number is closest to, and larger than, the track number for the destination position, and selecting a second boundary track whose number is closest to, and less than, the track number for the destination position.

6. (currently amended)   The method of claim 1, wherein approximating athe runout compensation value for the destination position includes:

calculating a fraction of zone by dividing a distance from the destination position to a

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zone boundary that is prior to the destination position, by a zone size;

    calculating a difference in the compensation values for the zone boundaries;

    multiplying the difference in the compensation values for the zone boundaries by the fraction of zone to generate a fraction of compensation values; and

    adding the fraction of compensation values to a-the runout compensation value for the zone boundary that is prior to the destination position.

7. (currently amended)   The method of claim 3, wherein, if the destination position is beyond the last established zone for which compensation values are present in the table, then boundaries for the last two zones in the table are used to approximate the runout compensation value for the destination position.

8. (currently amended)   The method of claim 1, wherein generating a control signal for controlling an arm based on the approximate runout compensation value for the destination position includes:

    summing the approximate runout compensation value for the destination position with a write-in repeatable run-out compensation value.

9. (original)   The method of claim 1, wherein generating a control signal for controlling the arm based on the approximate compensation value for the destination position includes generating the control signal based on the following equation:

$$i_{f1} = \left(A_f(track\_id) + a_f(n)\right)\sin(f \cdot \theta_k) + \left(B_f(track\_id) + b_f(n)\right)\cos(f \cdot \theta_k)$$

    where $a_f(n)$ and $b_f(n)$ are write-in repeatable run-out compensation value components, $A_f(track\_id)$ and $B_f(track\_id)$ represent compensation value components for a destination track track_id, f is a spindle harmonic, n is a number of sectors, and $f \cdot \theta_k$ is a rotational frequency of the disc.

10. (original)   The method of claim 9, wherein $a_f(n)$ and $b_f(n)$ are determined from the following equations:

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$$a_f(n) = a_f(n-1) + g_f \sum_{k=0}^{N-1} \sin(f \cdot \theta_k) PES(k)$$

and

$$b_f(n) = b_f(n-1) + g_f \sum_{k=0}^{N-1} \cos(f \cdot \theta_k) PES(k)$$

where g_f is a feedforward gain and PES is a position error signal.

11. (original) An apparatus comprising:

a repeatable run-out tracking module;

a data structure storage device coupled to the repeatable run-out tracking module; and

a control signal generator coupled to the repeatable run-out tracking module, wherein the repeatable run-out tracking module identifies zone boundaries for a zone that includes a destination position, retrieves compensation values for the zone boundaries from a data structure in the data structure storage device, and approximates a compensation value for the destination position based on the retrieved compensation values for the zone boundaries, and wherein the control signal generator generates a control signal for controlling an arm based on the approximate compensation value for the destination position.

12. (original) The apparatus of claim 11, wherein the repeatable run-out tracking module approximates a compensation value for the destination track by performing a piecewise linear interpolation on the retrieved compensation values for the zone boundaries.

13. (original) The apparatus of claim 11, wherein the data structure is a table of radially-dependent repeatable run-out zoned compensation values for boundaries of established zones of a storage medium.

14. (original) The apparatus of claim 13, wherein the table is generated by recording, during a calibration process, write-in repeatable run-out compensation values for boundaries of each zone of the storage medium for at least one harmonic.

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15. (original)   The apparatus of claim 11, wherein the repeatable run-out tracking module identifies zone boundaries for a zone in which a destination position is positioned by comparing a track number to track numbers for boundaries in the data structure and selecting a first boundary track whose number is closest to, and larger than, the track number for the destination position, and selecting a second boundary track whose number is closest to, and less than, the track number for the destination position.

16. (original)   The apparatus of claim 11, wherein the repeatable run-out tracking module approximates a compensation value for the destination position by:

calculating a fraction of zone by dividing a distance from the destination position to a zone boundary track that is prior to the destination position, by a zone size;

calculating a difference in the compensation values for the zone boundaries;

multiplying the difference in the compensation values for the zone boundaries by the fraction of zone to generate a fraction of compensation values; and

adding the fraction of compensation values to a compensation value for the zone boundary that is prior to the destination position.

17. (original)   The apparatus of claim 13, wherein, if the destination position is beyond the last established zone for which compensation values are present in the table, then boundaries for the last two zones in the table are used to approximate the compensation value for the destination position.

18. (original)   The apparatus of claim 11, wherein the control signal generator generates a control signal for controlling an operation of the arm based on the approximate compensation value for the destination position by:

summing the approximate compensation value for the destination position with a write-in repeatable run-out compensation value.

19. (original)   The apparatus of claim 11, wherein the control signal generator generates a control signal for controlling an operation of the arm based on the approximate compensation value for the destination position by generating the control signal based on the following

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equation:

$$i_{f1} = \left(A_f(track\_id) + a_f(n)\right)\sin(f \cdot \theta_k) + \left(B_f(track\_id) + b_f(n)\right)\cos(f \cdot \theta_k)$$

where $a_f(n)$ and $b_f(n)$ are write-in repeatable run-out compensation value components, $A_f(track\_id)$ and $B_f(track\_id)$ represent compensation value components for a destination track track_id, f is a spindle harmonic, n is a number of sectors, and $f \cdot \theta_k$ is a rotational frequency of the disc.

20. (original) The apparatus of claim 19, wherein $a_f(n)$ and $b_f(n)$ are determined from the following equations:

$$a_f(n) = a_f(n-1) + g_f \sum_{k=0}^{N-1}\sin(f \cdot \theta_k)PES(k)$$

and

$$b_f(n) = b_f(n-1) + g_f \sum_{k=0}^{N-1}\cos(f \cdot \theta_k)PES(k)$$

where g_f is a feedforward gain and PES is a position error signal.

21.(new)   A method comprising:

determining a compensation value for a destination position based on predetermined compensation values; and

generating a control signal based on the predetermined compensation values, wherein the control signal compensates for run-out.

22. (new)   The method of claim 21 wherein the run-out is repeatable.

23. (new)   The method of claim 22 wherein the run-out is radially-dependent.

24. (new)   The method of claim 21 wherein the determining step includes interpolating the compensation values.

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25. (new)   The method of claim 21 wherein the determining step includes extrapolating the compensation values.

26. (new)   The method of claim 21 wherein the predetermined compensation values are associated with zone boundaries.

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